COST AND MANAGEMENT

PROFI

Depreciation Allowances and Production Costs . . .

By Ernest H. Weinwurm

Cost Reduction in Action . . .

By William L. Snyder

LOSS

Official Journal of

The Society of Industrial and Cost Accountants of Canada

June, 1955

MANAGEMENT NOTE

SALARY EVALUATION

—Up to date, systematic salary evaluation is the accepted best method to insure that your salary structure is adequate, equitable and in keeping with your industry and the community.

—It is the method approved by business itself as the most acceptable and realistic approach to sound salary determination.

—It reduces the need for pure individual and personal day-to-day decisions on salaries and salary administration.

—It improves employee confidence and relations, as the fairness of the method is readily accepted by your personnel.

Ask your business friends, whose companies have Salary Evaluation, what it has done for them.

It deserves your investigation

J. EDGAR DION

CONSULTING MANAGEMENT ENGINEERS

4643 SHERBROOKE STREET WEST — MONTREAL 6, CANADA
GLENVIEW 1428

Your inquiries are invited—No obligation naturally.

Cost and Management

VOL. XXIX JUNE No. 6

DEPRECIATION ALLOWANCES AND PRODUCTION COSTS

By Ernest H. Weinwurm 211

Ernest H. Weinwurm is the Associate Professor at De Paul University, Chicago. Until recently, he was Associate Professor of Industrial Engineering at the Stevens Institute of Technology, Hoboken, N.J. where he was in charge of the programme in cost control and management planning of the graduate division. Mr. Weinwurm holds a master's degree from the Graduate School of Business Administration, New York University, and a doctor's degree from the University of Vienna.

COST REDUCTION IN ACTION

By William L. Snyder 227

William L. Snyder is Manager of the Cost Estimating Department, York Corporation, York, Pa., and also serves as Chairman of the Corporation's Cost Reduction Committee. He previously served as Manager of the Manufacturing Accounting Department of the York Corporation. He is a member of the York Chapter of the National Association of Cost Accountants.

REGULAR DEPARTMENTS

EDITORIAL COMMENT 202

C. & M. ROUND-UP 207

STUDENT SECTION 238

Published Monthly by the
SOCIETY OF INDUSTRIAL AND COST ACCOUNTANTS OF CANADA
Incorporated 1920
Editorial and Business Offices: 31 Walnut Street South, Hamilton, Ontario
J. N. Allan, R.I.A., Secretary-Manager and Editor

Subscription price to non-members, $5.00 per year. Single copies, 50 cents. Members desiring five copies or more of a single issue, may obtain them at 25 cents. Opinions expressed by articles and comment are not necessarily endorsed by the Society of Industrial and Cost Accountants.

Authorized as second class mail, Post Office Department, Ottawa.

Editorial Comment . . .

EDUCATION AND BUSINESS

Thinking individuals have always been concerned about the state of education. It seems that in at least every generation the circumstances are repeated which moved Milton to observe:

> "to write now of reforming education . . . one of the greatest and noblest designs that can be thought on, and for the want whereof this nation perishes . . . "

Today's circumstance is that of confusion; there is so much discussion of matters relating to scope, subject matter, arrangement, and student participation, that it is difficult to distinguish the principles from the detail, and the objectives from the means. It is interesting, therefore, and rather provocative, to ponder what we are doing in education and where we are going.

The democratic approach to education presumes that everyone, regardless of beginnings or background, should get as much of and the type of education they desire. Almost inevitably, as a result, education is slanted to the practical side, for the vast majority of the school population never reach university, and they want to be ready to earn a living when their formal schooling is finished. Thus practical education has been making steady inroads into the precincts of classical education.

Included within this area of practical education is the classification business education. It is for this reason that courses in business practice were long regarded as the pariahs of Academic Halls. But this attitude, although still prevalent, has been surmounted, business education being accepted as part of the curriculum of high schools by the turn of the century, and being accorded a legitimate place in the universities by the first quarter of this century. As is to be expected, the approaches to the subject by secondary schools and universities are very different. Business training in high schools is generally of a prevocational nature, that is, with an emphasis on the general principles involved in performing a task rather than training in any specific task. Business training in the universities, on the other hand, is usually of a professional nature—the disciplining of the mind, but disciplining in relation to a particular field of endeavour. Thus the former approach stresses types of detail while the latter approach relates the detail to theories. Under this division of labour, so to speak, in business training, the function of providing vocational training in business has been traditionally the role of other educational agencies, the private correspondence schools and the larger professional associations. These agencies provide training that is to be applied in the performance of specific tasks, such as, draughting, welding, costing or auditing. For vocational training of a semi-professional nature, such as cost accounting or auditing, the entrance standards required are generally equivalent of high school graduation. Thus we see that as it originally developed, education for business had three natural divisions: Pre-

vocational (secondary schools), professional (universities), and vocational (other agencies).

However, in the last decade, this division of functions has become scrambled. The agencies are extending into the areas of the universities by adopting programmes designed to mould attitudes rather than develop techniques; at the same time, the universities are reaching backward into the area of the agencies by adopting business courses which have no educational prerequisites or job experience requirements, but nevertheless grant certificates.

Virtually every university announcement, for example, in addition to its traditional day courses, offers a wide choice of business courses under the auspices of its extension department. Some of these courses are short summaries courses intended to serve as surveys or refreshers. Others are academic courses given at night to students of university calibre who are in full-time day employment. Still others are non-academic courses at night as part of a programme of adult education. Thus the universities are catering to a number of different levels of educational need; no wonder the pattern has become scrambled.

In these circumstances, many well meaning and sincere people are under the impression that a sessional attendance of some adult education class will bring out their latent professional abilities. To make this observation is not to condemn adult education, for anyone familiar with the movement readily acknowledges the contribution it makes to filling the gaps of formal education. But it does point up the fact that many people are under the impression that there are short-cuts to business professional status.

Admittedly the training of business professionals is somewhat different from the training of other professionals. The critical part of the training of doctors, lawyers, ministers, and engineers occurs before the individual is employed in the profession; the critical place in the development of managerial professionals only occurs after the individual has had some contact with practice. However, no business leader is likely to support the premise that business practice is simple, or that anyone with a little experience and a short night course can make a huge success of it.

It would seem then, that it is time for a re-appraisal in business education. Undoubtedly there is an almost insatiable thirst for business knowledge, and in response to this thirst, extension courses have been expanded and entrance requirements lowered. The motive initiating this development was all for the good, but the expansion itself has taken place without national co-ordination or any kind of standardization, so that the public has no means of grading the product to be received under the various auspices. As a result, confusion has followed, and it seems to us that the first step towards improvement is a re-appraisal of the functions of the various educational bodies.

The Society's New Quarters . . .

On April 30th last, the Canadian and Ontario Society of Industrial and Cost Accountants moved into their new quarters at 31 Walnut Street South. In the process of moving there was an unmistakable feeling of leaving history behind and emerging into a bright and promising future.

For the past eighteen years the office of the Society of Industrial and Cost Accountants had been located at 66 King Street East during which time frequent changes were made from a one room office into successively larger quarters in an effort to keep up with the growth of the Society. During this time the membership of S.I.C.A. expanded from 266 to 4,527 and the number of chapters from 5 to 29.

It was during this period that the Society embarked upon its educational programme which provides a course of training leading to the designation of R.I.A. To achieve its educational objectives, incorporated affiliated societies were organized in all ten provinces. This past year there were 2,900 students enrolled in the 21 universities that offered the R.I.A. courses.

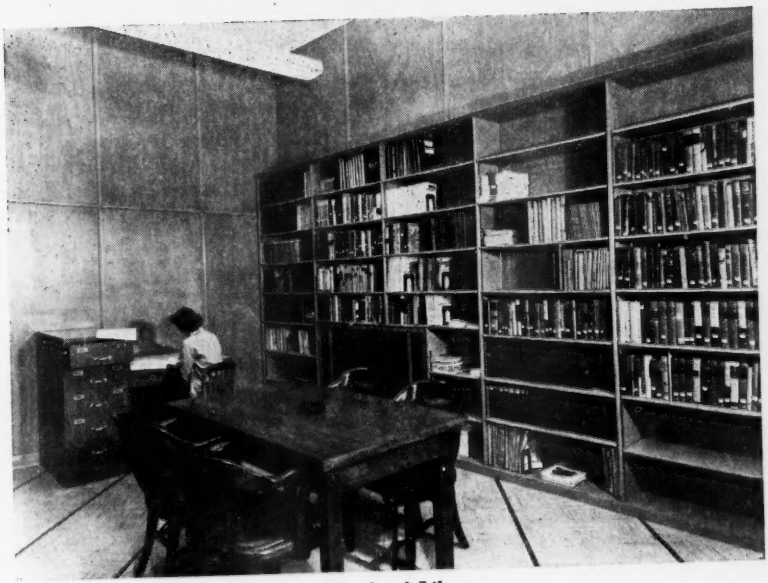
The new office offers visible evidence of this growth and bespeaks a confidence in the future born of accomplishments in the past. The general office is bright and spacious, sufficiently modern in design to affect a progressive organization, but functional in keeping with the needs of an efficient staff.

Stock room facilities and the printing department have been greatly enlarged to provide for the rapidly increasing volume of work being done. Visiting members will be particularly interested in the library which is distinctive and rich in appearance with an atmosphere conducive to concentrated study.

There are three private offices with walls panelled in caboom mahogany and finished in soft shades which bring out the natural artistry of the grain characteristic of this type of wood.

In appearance, the office reflects the vitality and progressiveness of the organization while maintaining a dignity that is characteristic of its membership.

A View of the General Office



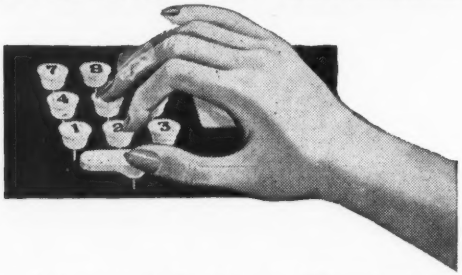
The Members' Library

Speed up with the

10-KEY KEYBOARD

exclusive in

UNDERWOOD SUNDSTRAND ACCOUNTING MACHINES



The famous, fast, accurate Sundstrand 10-key keyboard minimizes hand motion . . . helps your operators turn out more work, more easily, and in less time. And they are a cinch to learn for beginners, too, because these machines have only 10 numeral keys . . . all arranged in logical sequence under the finger tips of one hand.

You'll like Underwood Sunstrand's time-saving *versatility*, too. Switching from one application to another on an Underwood Sundstrand Accounting Machine is accomplished in seconds.

Send for the whole story of Underwood Sundstrand Accounting Machine speed and simplicity. Simply use the coupon below today.

ACCOUNTING MACHINE DIVISION

Underwood Limited

Head Office: 135 Victoria St., Toronto 1, Ontario

Branches in all principal cities

UNDERWOOD LIMITED, 135 Victoria St., Toronto, Ont.

Please send me your illustrated folder describing the time and money saving advantages of Underwood Sundstrand Accounting Machines.

NAME..... TITLE.....

COMPANY.....

ADDRESS.....

CITY.....

CM-6-51

C & M Round-Up . . .

By N. R. Barfoot, R.I.A.

Debts

The national debt in 1938 was 3.386 billion. In 1955 it stood at 14.5 billions.

However, it is of interest to note that carrying charges were 3% of national income in 1938, and had dropped to 2.1% in 1955.

Since the war, the debt has been reduced by 2 billions.

A sharp rise in four other kinds of fixed interest securities in Canada has taken place since the war. The total of provincial, municipal, and corporate bonds, and mortgages now equals 14 billions.

Victory loans resulted in foreign ownership of the national debt dropping from one third to five per cent.

Workmen's Compensation Act, Ontario

The act came into force in 1915.

Assessment that year was $1,539,000 for 14,750 employees.

By 1940 there were 24,385 employees covered.

At the end of 1954 the number of employees covered was 60,453 and the industry assessment was 30 millions.

Cartels, Price Fixing and Combines

The act was passed in 1923.

Forty-one published reports have been made in that time.

Twenty-five have been made since 1946.

Twenty-three have resulted in prosecutions.

Approximately 13 formal investigations are under way now.

Sixteen of these 23 have resulted in convictions.

World Bank

The International Bank for Reconstruction and Development began operations in 1946. Here are a few figures about it.

In nine years it has mobilized over 1 billion dollars of private funds for international investment.

Total loans since then amount to more than 2 billion dollars.

Some 450 projects on six continents have been helped.

Details of some of these projects are:

Iceland—assistance in sheep farming.

Pakistan—Dieselization of railways has reduced fuel expenditures by over 1 million per year.

Peru—Ocean freight handling at Callao has been improved by help of modern unloading equipment.

Australia—Agriculture generally has been assisted. Electric power projects financed by the Bank have been introduced in Brazil, Chile, Colombia, El Salvador, Mexico, Nicaragua, Uruguay, and Southern Rhodesia.

Dispersion of the Bank's capital is in many countries. Some 23 issues of its bonds have been made in 5 different currencies. About 500 millions are held by private investors in the U.S. and the balance in pounds sterling, Swiss francs, Dutch guilders, and Canadian dollars.

Restaurants

In case you have ever wondered about restaurant economics, here are the latest figures to come out of the 1955 Restaurant Association Convention:

The restaurant dollar is broken down as follows:

Meat	25 cents
Groceries	6 cents
Vegetables	6 cents
Dairy items	10 cents
Bakery Products	3 cents
Payroll	30 cents
Rent	5 cents
Maintenance	4 cents
Utilities	3 cents
Taxes	3 cents
Profit	5 cents

Food costs run about 50%, Payroll 30% and general overhead 15% with profit 5%.

How Successful Are You?

An analysis of some 300 Canadian corporations representing some 15 groups of industries showed the following financial trends during 1954.

Ten of the groups paid lower income taxes in 1954 over 1953. Oils, paper, utilities, construction, and lumber, paid more.

Shareholders in general received more dividends than in 1953. Textiles alone, paid less in 1954.

The working capital position of most of the companies was ahead of the 1953 level. The combined total rising 6.2%. Only four groups showed declines—merchandising, public utilities, milling and grain, and construction.

Although the groups showing a drop in earnings outnumbered those showing a gain, three of the eight which lost ground, beverages, finance, and miscellaneous—suffered only slight reductions.

All groups added to net worth, the group rise was 6.7% with the finance group registering an 18.5% rise and merchandising a 20.3% rise.

Percentage return on combined net worth continued to decline. The return on the whole group was 9.48% in '54 compared to 10.15% in 1953. Metals, pulp and paper, utilities, construction, and lumber however, did show a rise.

How About That Job?

Here are some pertinent facts about the job situation for this year's University graduates:

	No. of Graduates	Job Outlook	Average Monthly Starting Salary
Arts	4,505	Fair	$250
Agriculture	240	Fair	260
Commerce and Business Administration	762	Excellent	300
Education	1,618	Excellent	
Engineering	1,505	Excellent	330
Law	642	Good	250
Medicine	901	Good	
Pure Science	901	Excellent	285
Forestry	70	Fair	280
Social Services	287	Good	$225
Veterinary Science	84	Excellent	275

OBITUARY

It is with sincere regret that we announce the death of J. Orchin on April 8th.

Mr. Orchin, a General member of the Montreal Chapter, was with Canadian Tube and Steel Products Limited at the time of his death. To Mrs. Orchin and the members of the family we extend our deepest sympathy.

* * * * *

It is with the deepest regret that we announce the death of Murdoch R. MacGregor, General Member and an Officer of the Moncton Chapter. Mr. MacGregor, who was with R. R. Colpitts and Son, died in Moncton Hospital on Thursday, March 3rd. He contributed greatly to the activity of the Moncton Chapter, and will be missed both by his many friends in the Chapter, and the Society.

PAYNE, PATTON & PUGSLEY
CHARTERED ACCOUNTANTS
Gordon S. J. Payne, C.A. Donald R. Patton, C.A.
Philip T. R. Pugsley, C.A.
Suite 14, The Linton,
1509 Sherbrooke St. West Montreal, Que.

BANK OF MONTREAL

WORKING WITH CANADIANS IN EVERY WALK OF LIFE SINCE 1817

PERSONALS

R. J. A. Taylor, Secretary-Treasurer of the Bay of Quinte Chapter for 1954-55, has recently been appointed Treasurer of Mead Johnson and Co. of Canada Ltd., Belleville, Ontario.

Ernest W. Scott, R.I.A., has been appointed Assistant General Manager of The Ryerson Press in Toronto. Mr. Scott has served the firm since 1934 as cost accountant, office manager and chief accountant. He assumed his duties in this newly-created position on May 1st.

G. K. Hutchings has been recently appointed Vice-President in charge of Finance at the Smith Manufacturing Company Limited, Weston, Ontario.

W. H. Huck, C.A., has been promoted to Assistant Deputy Minister of the Department of Defence Production at Ottawa. Mr. Huck joined the Department of Defence Production on January 1st, 1953, from the Department of National Revenue.

Depreciation Allowances and Production Costs . . .

By Ernest H. Weinwurm,

Associate Professor of Industrial Engineering, Stevens Institute of Technology, Hoboken, N.J.

The author maintains that the procedures and terminology presently used in determining industrial costs and depreciation allowances, are unsatisfactory.
These methods, although appropriate for Financial Accounting, are inadequate for the industrial accountant, and in his article, Professor Weinwurm illustrates the application of new methods and techniques to satisfy existing requirements.

COST ACCOUNTANTS have always had a hard time to deal with depreciation as a cost item. Somehow, it did not fit into the broad pattern of cost classifications and techniques as had been evolved over the years. None of the methods in use to deal with depreciation as a cost of production has been really satisfactory. In the circumstances, a reappraisal of the problem should serve a useful purpose.

Predominance of Financial Accounting Methods

Industrial accounting is one of the younger branches of financial or general accounting. Thus it is not surprising that the latter still preserves some of its parental predominance as to terminology and procedures.

Yet it is a fact that the big strides accountants have made within the ranks of industrial management are primarily the result of new methods of analysis and pre-determination developed by industrial accountants. But so strong has been the spell of superiority exercised by some leaders in financial accounting, that industrial accountants still accept without much scrutiny, methods supported by those leaders, although they may not be in accordance with their own peculiar requirements.

Depreciation is an outstanding case in point. Industrial accountants are using methods developed by their financial brethren without serious questioning.

Those methods, though satisfactory for the aims of financial accounting, are clearly inadequate to serve the needs of industrial management. Even when engineers have concerned themselves with depreciation problems, they have gone along with those same techniques.[1]

The Depreciation Concept of the Industrial Accountant

To the industrial accountant, depreciation is one of the factor costs of production. A number of input factors contribute in the making of finished products (output). Those factors are traditionally classified as direct (material, labour) and indirect (overhead) factor costs; depreciation is one of the overhead cost items essential to attain the production goal. Therefore, depreciation is just as much a cost of pro-

(1) See for example the standard work: **Depreciation,** by E. L. Grant and P. T. Norton, Ronald Press.

duction as labour or material and every unit of completed product has to be charged with its proper share of all these input factor costs.

Among these, depreciation represents the cost of facilities such as plant, machinery, and other equipment which must be kept ready so that labour can be employed to convert materials or assemble parts into units or finished products. Obviously, there cannot be any kind of manufacturing operations under conditions of modern technology without those facilities being available for use. Therefore, the cost which reflects the availability and use of those facilities is accumulating constantly as long as there is any production, and must become part of the cost of each unit of the finished product.

The Financial Accountant's Viewpoint

However, this is not the manner in which the financial accountant looks at depreciation. It means to him primarily, a process of spreading the original cost of acquisition of productive facilities over the period of their "useful lives",[2] by what he considers a constant procedure. In this way, the original cost of the facilities will be absorbed into the revenue and expense accounts in such a manner as to have their asset value disappear from the accounting records at the time when their "useful life" has expired, and the facilities are being scrapped or otherwise disposed of.

Thus the method of computing depreciation as practiced by financial accountants is based on *time* as the determining factor. It appears that there is no necessary correlation between the portion of the cost of the facilities which is included into cost of every unit of product, and the amount of expense which is charged out as depreciation during an accounting period.

The first function is reflecting primarily the *volume* of production accomplished through the use of those facilities since each unit of output has to be charged with its proper share of their cost. The second function, on the other hand, depends on the cost of acquisition and the expected useful life of the facilities.

It is conceivable that a correlation may actually exist between computations based on time and those based on volume; but this cannot be taken for granted but must be shown to exist. From a viewpoint of correctly determining product costs and their components (and this is the viewpoint of the industrial accountant), the volume concept is clearly the important one, and much more accurate than the generally accepted time concept.

A More Meaningful Terminology

Shortcomings in terminology are among the factors which have made our problem so very complex; therefore, this special issue deserves some consideration.

(2) Determination of the "useful life" period of time is considered a job for the engineer. His estimate will provide the accountant with the evidence he is looking for to make his records as "objective" as possible.

The term "depreciation" refers originally to a loss in value sustained by a facility as a result of use in production. It, therefore, reflects primarily the standpoint of the investor whose interests are served by the financial accountant. In order to ascertain correctly the loss in value over a period of time, it would be necessary to determine the *current* value at the beginning and at the end of each time period. The difference would represent the loss in value and thus, the cost of using the facility.

Thus it appears that this method is quite different from the one now in general use which emphasizes the *first* (original) cost or value and purposely disregards the current value altogether. Adoption of the method as described above would make the balance sheet figures more meaningful but the periodic cost of the facility would be dependent on fluctuating market values. Therefore, this cost may vary though both the time and the volume factor remain unchanged.

The U.S. Department of Commerce in its national income statistics uses the term *"capital consumption allowance"*, and this approach has also been adopted by the Canadian legislation as an equivalent for depreciation. This, certainly, represents a terminological improvement. For it stresses the technological viewpoint of consumption of serviceability through use instead of the fiscal one of value decline, which underlies the original concept of depreciation, or the current use of the term which stresses allocation of original cost.

However, it seems that one more step is required toward fuller clarification in order to bring out the point that a cost concept is the principal measure for the use of facilities for production purposes. Frequently, such cost may be identical with the amount of capital consumption as determined by engineering studies. But the correlation is not a necessary one; the cost to be charged for the use of facilities may be influenced by a number of other factors in addition to that of capital consumption.

Therefore, it is suggested that the term to denote this situation should be chosen in accordance with that generally used for other input factors. We always talk about "cost of material", or "cost of labour". Then, why not use the term, *"cost of facilities"?* It would indicate exactly the relationship and, incidentally, the fundamental equality of this facility cost with the other cost factors. This terminology will be used in the present paper, and it is to be hoped that it may find widespread approval and adoption in the future.

Volume (Use) Factor versus Time Factor

Accountants are concerned primarily with a consistent method of allocating the original cost of facilities over periods of time. This method may well reflect somehow a decline in value or the input cost on a volume basis. But the assumption that such a correlation exists cannot be substantiated in a general manner. Certainly there is hardly any objectivity associated with that method, except the estimate of the

engineer as to the facilities useful life which is accepted as an objective statement by accountants without questioning. But it may be doubted whether the present "division of labour" between engineers and accountants serves any useful purpose toward clarification of the problem in question.

The weaknesses of the method to allocate facility cost on a time basis are well known. A method based on volume rather than time has been developed, but has been little used except in mining operations. The reasons for this rather unusual practice of preferring a poorer method to a better one are not hard to discover. It is the difficulty of pre-determining the exact quantity of expected cost for any particular facility.[3] The customary technique based on time, on the other hand, lends itself to a comparatively simple solution of the problem.

Financial accountants should not be blamed for using this method. Their interest is not in details of cost determinations, but rather in total cost data (income computations). The time-based method provides them with an approach which appears suitable, reasonable and simple.

But the position of the industrial accountant is quite different. He is supposed to be especially interested in accurate cost data. He should not be deterred by apparent difficulties from searching for an improved method to determine facility cost. However, tradition and the overwhelming weight of financial accounting practices has precluded attempts for a critical analysis of the problem.

How Important Is the Cash Outlay Aspect?

Even if it is accepted that the cost of facilities is a production cost just as the cost of materials, labour and services, there still remains the need to find out whether there exists any basic difference between the cost of facilities and other production costs. Even if the answer is in the negative, there is one fact which needs to be considered for the sake of clarification. Most production costs are cash outlay costs (out-of-pocket costs). They will be settled in cash immediately or within a brief period in most instances. But the cost of facilities does not lead to an outlay of cash. It does not refer to a recent transaction but to one which occurred long ago namely the original acquisition of the facilities. This fact has intrigued or confused many experts, and has led to the segregaton of the cost of facilities from the other production costs.

Though modern accounting method relies on the accrual concept as a principal technique, there is still a preference for the cash concept as an approach which is capable of better and easier proof of objectivity than the accrual concept. There is little doubt, though it cannot be proved, that this preference (perhaps unconsciously) has contributed to the special treatment of the facility costs as something of a non-cash

(3) This difficulty is aggravated greatly by the Internal Revenue regulation which prevents subsequent adjustments to make up under depreciation resulting from low estimates. Other countries (such as Great Britain and Canada) permit those readjustments.

type. However, the difference is merely one of time. In one instance, the cash settlement occurred in the past; in the other it is completed at the present time or in the near future.

We may now proceed a step further and demonstrate that the generally accepted relationship of facility cost and cash settlement is not the only one. It may be found that it is merely one conceivable approach and there may be another which equalizes the position of facility cost and other production costs even in relation to the cash concept.

Ownership and Lease-back

There has been a substantial increase, over the last few years, in the practice of leasing rather than owning production facilities such as buildings, machinery and equipment. Here is a new application of the time-honored technique of division of labour. A manufacturer rather than first raise funds by selling securities to investors and then use those funds for building or purchasing the facilities required for production, will lease them from an investor who has used his funds directly instead in a more round-about manner by investing in securities issued by a manufacturer. Moreover, a company which owns facilities may sell them to an investor and then lease them back for a long period of time. There is no change in the physical set up. The facilities that were at the manufacturer's disposal in the past will remain so in the future.

This is not the place to argue the pros and cons of this novel technique from the viewpoint of the parties concerned.[4] But its significance for our principal problem is readily apparent. The lessee will pay a current rental to the owner-investor. This rental cost will be in lieu of the former charge for the cost of facilities (depreciation). This rental cost will be paid currently in cash just as the cost of material, labour and other services. Therefore, the gap between the two types of production costs which originated from their different relationship to cash outlays disappears. All production costs are in the same boat as far as their settlement in cash is concerned.

The conclusion is unavoidable that the much emphasized distinction between the cost of facilities and other types of costs is more theoretical than real, and, thus, can be omitted from our considerations from now on. We shall proceed from the assumption (which is supported by logical conclusions) that all production costs may be looked at in the same way as far as cash outlays are concerned. The case of ownership, where the cash outlay occurred in the past, may be accepted as a special case, an exception rather than the fundamental condition. This comparatively minor change in approach will be found to open the door to the solution of problems which have appeared to defy clarification up to now.

(4) See also: Leaseback vs. Security Financing. Report of a study prepared by a Sub-committee of the New York City Control of Controllers Institute. The Controller, September 1953; and Maurice E. Peloubet, An Indictment of the Accounting Profession for Failing to Deal with the Effects of Inflation, Journal of Accountancy, December 1953.

Current Costs for Input Factors

Production costs are current costs. They reflect current conditions and price levels. There are exceptions from this general rule according to accepted accounting methods. Depreciation cost is excluded altogether and there is disagreement on how to determine costs of products taken out from inventories.

But, by and large, costs of input factors must be based on current conditions. They must be sufficient to keep the supply flowing. If they are too low, this may benefit the consumer temporarily. But if the supply of materials, required labour skills or services dries up as a result of unprofitable operations or inadequate rates, production itself may be jeopardized. Therefore, the cost incurred for input factors must be adequate to assure their reproduction as required.

This rule should be extended to the cost of facilities as well. There is no justification for the present accounting method. In fact, it is the result of a misunderstanding by concerning itself with the past instead of with the present and future. Costs incurred in the past cannot determine costs to be charged into current production. If this is done, the cost of current production is computed incorrectly, and the results are those which flow from wrong costs in general: lack of proper guidance for managerial control, and policies which depend on correct cost data.

Therefore, the *cost of facilities must be computed in such a way as to make possible the replacement of those facilities* whenever this should be necessary for any particular reason.[5] Thus comes to an end the perennial argument regarding the proper method of determining the charge for production facilities. As it happens so often, there is no answer to a question which has been put in the wrong manner. Once it is being recognized that the same rules prevail for the cost of all input factors, then the old problem simply disappears.

Like other input factors, the cost of facilities is determined by current conditions with a view to keep the enterprise in profitable production.[6] Under a lease or lease-back arrangement as discussed above, the rental charge will be set automatically in such a way, as will enable the investor to recover or maintain his investment, plus a return in line with market conditions. From the standpoint of the manufacturer-lessee, the rental will represent a cost based on current conditions like the cost of the other input factors.

It may be argued that the proposed method may operate satisfactorily under the special conditions of a lease but would not be suitable for "normal" ones when owner and operator of the facilities are legally identical. This dilemma could be solved readily by making it an accepted practice to set up separate legal entities for the owner (the real

(5) This would not necessarily interfere with the methods presently used by financial accountants as will be shown later in this paper.

(6) In economic terminology, this can be identified with the principle of maintaining the investment in physical terms before earning a profit. The methods now in use tend to frustrate ths basic principle. This has been widely recognized but is still opposed by many leading accountants.

estate company) and the user (the operating company). Such a procedure has been followed by many companies for a long time. But this method, though easy to apply, is not essential. The new technique is practicable even when owner and user are identical. Only slight modifications of present practices are needed as will be shown below.

Factual vs. Estimated Data

We are now ready to tackle the central issue of our problem, namely the method of determining the *current cost* to be charged for the use of facilities in production. But as a preliminary, a brief discussion of the significance of estimates in accounting will be helpful.

Many promiment accountants still think of their profession as a technique to accumulate and classify what they consider *factual data.* They frown upon estimates which they believe would tend to endanger the objectivity and general acceptability of accounting data and statements.[7]

They will concede that estimates are indispensable in some instances, but they will do their best to surround them with all sorts of safeguards to minimize, as far as possible, the threatening dangers. They look with disfavor and even disgust upon the ever increasing use of estimates by accountants in the fields of budgets, standard costs, profit planning and other similar management techniques.

Yet a decision is unavoidable. Either accounting method will be restricted to the recording of actual historical data with all their limitations for managerial uses, or applicability for managerial purposes will be considered a paramount aim of modern accounting. Then appropriate techniques including estimates will be required on a substantial scale.

Accountants are working with a rigid scheme of allocating the original cost of facilities over time periods which not they, but engineers, have estimated. This, in their opinion, assures faithful adherence to their fundamental principles and excludes estimates at least from their own computations. But it has been proven time and time again that no satisfactory solution of our basic problem is feasible on such a shaky foundation. Indeed, techniques are essential which are less restricted but are based on a realistic and practical attitude.

There is need for recognition that decisions regarding the methods for allocating the cost of facilities are not a matter of formal arithmetic but one of managerial judgment. All management decisions depend on estimates to a larger or smaller extent; for they are concerned with future events and no mortal being has any complete inside information about these events.

(7) The obvious preference for cash outlay transactions over accurals is a significant indication of this way of thinking.

Futile Attempts of Rigid Predictions

The origins of the accounting doctrine whereby final decisions regarding the number of time periods for allocating the original cost of facilities have to be made at the time of their acquisition, would be a worthwhile subject for research. This odd doctrine reflects the idea of objectivity and certainty which is so fundamental to accounting philosophy and method. But unfortunately, application of that principle in this instance is quite unrealistic. Obviously it is contrary to all practical experience. For how is it conceivable to predict without qualifications the "useful life" of facilities for many years ahead.

Efforts have been made to support that method by developing data on an "actuarial basis". There have been statistical studies of the actual lives of "facilities" similar to those of "human lives".[8] How can such a procedure be accepted as valid and significant under an economic system which takes pride in its flexibility as well as its constant tendency for improvement and change?

What does it really mean to determine that a number of plants have used a certain type of machinery for an average number of years over the last twenty or thirty years. Does it furnish any useful indications on what companies are going to do in the most distant future with different types of machinery, under different economic conditions and on the basis of different managerial philosophies and practices? The answer can only be in the negative. And yet, here is the very procedure which has been dominant for many years and is being vigorously defended by eminent practitioners and leading professional organizations.

It is surprising how such a method could survive without any serious challenge. Whatever attacks have been made, were directed against particular unfavorable effects rather than against the principle itself. But we must discard it, to clear the ground for a more satisfactory solution of our problem. There must be a realistic approach toward existing conditions and the need of industrial management for data which are not only formally accurate but which can make useful contributions to the tasks which management is called upon to perform.

Estimated Rental Charge for Owned Facilities

It was explained before, how substitution of rental arrangements for ownership tends to make possible a constructive approach to our problem. Now it will be shown how this first step leads to an improved method to determine the amounts which are to be charged currently as a cost for use of the productive facilities.

If we assume that all these facilities are leased, their owners will charge a rental which will be the cost for their use to be borne by the operating company. This would be a current (say monthly) cash out-

(8) These studies have provided the foundation for the "lives" presented in the famous "Bulletin F" of the U.S. Treasury which though officially merely advisory, has beome the Bible for the practitioners in the field.

lay, and thus as objective a charge as accountants could desire; it would be one of the current costs of production.

If the facilities are owned, there is no current outlay. But we can make an assumption and *estimate what the charge would be if the owned facilities were rented.* The amount so determined would represent the current cost of having the facilities available for use in production. Every unit of product completed would have to bear its proper share of this cost like that of every other cost of manufacturing.

Obviously, such amount would have to be an estimate. But it would be based on realistic assumptions and conditions. It will be at least as objective in a practical (not merely in an arithmetical) sense as the method generally in use at the present time and probably much more so. Of course, detailed procedures will have to be worked out on how to arrive at the proper estimates. This would not present insuperable difficulties, though. Already quotations are currently available for rentals of various types of manufacturing equipment.

The techniques for developing those quotations would have to be refined. Conceivably, special committees may be organized to set up standards of procedures and review existing quotations as to fairness. Those committees may include representatives from both buyers and sellers, trade experts and perhaps government officials from statistical and revenue departments. Special committees could study various types of facilities, regional differences and other peculiar conditions.[9]

The committees would publish periodic schedules of rental charges (monthly, quarterly, annually as the need may be). These data may be used by industrial accountants for computing the charges for use of productive facilities.

Proper consideration of the *volume* factor can be achieved in various ways. A closer connection between cost (of the lease) and volume would be the natural result of more flexible lease arrangements which would take into consideration the actual use of the facilities. It is not essential that a detailed count of the production volume would have to be made, though this will be feasible and practical in various instances.

A technique widely used is to distinguish between a basic and a flexible charge where the latter reflects the use factor. This, in turn, is correlated with the volume of production. Such arrangements are standard practice of public utilities, and similar ones are frequently used in leases of retail or service establishments when an additional rental has to be paid which represents a percentage of sales or profits.

Thus it appears that there is ample room for various kinds of arrangements which will provide for due consideration of the volume

(9) A sort of precedent may be found in a procedure set up several years ago whereby the U.S. Department of Labour Statistics determines periodically price changes for major classifications of goods sold in department stores. These data are used by the stores to adjust their LIFO inventories and are accepted by the Internal Revenue Service as a basis for adjusting inventory valuations.

factor. In contrast, the present techniques which are related to time do not permit any leeway.

The very important gains resulting from the greater flexibility of the facilities charge for purposes of managerial control and planning, are readily apparent, but cannot be discussed here.

Advantages of the New Method

Substantial improvements of accounting information for managerial purposes will be derived from the proposed new method. The following advantages may be mentioned in this connection:

1. Elimination of the present double standard for cost determination whereby the cost of using productive facilities is computed, in contrast to the cost of other input factors, on a historical rather than on a current basis. This change, in turn, will have far-reaching effects.

2. Among those will be disappearance of the perennial problem of original cost versus replacement cost. What would be charged out under the new method would be kept by the owner at a level which will be in line with replacement cost as a matter of his self-interest to protect his investment. If a facility needs replacement, the rental charge may well change at the same time. This may be the result of acquisition of a different type of that facility or merely of market conditions.

For financial accounting purposes, the cost of acquiring the replacement facility, if any, would still be shown as an asset. But the financial accounting method would have no effect on the cost accountants' computations.[10]

3. It would also mean disposing of another long disputed problem, namely, of how to deal with the effects of monetary fluctuations when computing depreciation charges. This issue has created deep-seated divisions among the experts without hope for reconciling their differences. Now it would no longer exist, for rental schedules would naturally be based on current conditions and, therefore, there would be no immediate connection with historical cost data.

4. Relieving engineers of their present impossible responsibility which forces them to produce firm estimates for many years ahead as a basis for determining the "useful lives" of facilities. Accountants are accepting these estimates as permanent, unchangeable truth, though there is no justification for such a procedure.

These estimates would no longer be needed for accounting purposes of determining income and cost data. Estimates of a facility's usefulness in connection with planning activities would have equal significance with other kinds of estimates made for such purposes.

(10) The problem of providing the necessary cash to pay for the new facility is completely separate from, although often mixed up with, that of computing cost and determining income. It is a management problem and not an accounting problem. It is one of the management responsibilities to decide how to satisfy the financial requirements for replacement and expansion projects.

5. Clarification and simplification of the whole field of depreciation. The present confusing situation of having available a number of alternative methods leading to different results would disappear. There would be only one method in use which could be explained easily to management and other interested groups.

6. A practical method of using the volume factor for computing the cost of facilities which is not available at the present technique. There would be far reaching beneficial effects on management planning and control activities.

The Tax Angle

A deliberate effort has been made up to this point to exclude tax aspects in considering problems of determining the cost of facilities. This may be surprising in view of the close correlation of the two factors in almost all discussions of the problem. There is no denial of this as a *practical* proposition. Taxes have increased so much that business decisions cannot be made without close attention to related tax problems. However, there is no *fundamental* correlation in the sense that no analysis of our problem can be undertaken without constant consideration of tax effects. This must be spelled out as clearly as possible in view of the fact that the opposite view is so widely held.

The problem of correctly computing production costs (of which the cost of facilities is just one) is a real one and needs to be solved even if there is no income tax. Therefore, an analysis should be undertaken which purposely disregards the tax angle to bring out the salient features of the principal problem. Only after this has been accomplished, the tax angle should be introduced to make the study more realistic, for practical applications. Otherwise, the analysis will have little meaning to the industrial executive and the professional expert.

It goes without saying that the new method suggested here for determining and applying the cost of facilities is not in accordance with the present regulations and practices of the Internal Revenue Service. However, it is not inconsistent with the provisions of the Internal Revenue Code which merely authorizes depreciation as a deductible expense without any restrictions regarding the method of computation.*

Yet the mere fact that the arbitrary practices of the Internal Revenue Service disagree with the new and forward looking developments in the field, is no excuse for industrial executives and industrial accountants to refuse adoption of those practices in connection with their internal cost computations and studies. They ought to go ahead and apply the most useful and significant methods regardless of the position of the Internal Revenue Service. Indeed, this is the practice of numerous industrial companies though certainly not that of a majority. The cost of keeping some additional records for tax purposes

* In Canada, the situation is different. The Income Tax Act not only dictates how depreciation is to be computed for tax purposes, but also specifies the rate for different classes of asset. However, for other purposes, firms are free to adopt the method which best serves their requirements.

will be insignificant in comparison with the benefits accruing from a sound method of computation. Of course, continuous efforts should be made to have the interpretations of the Internal Revenue Service liberalized in conformity with the realistic principles of cost determination. But it would be foolish to wait with folded hands until such improvements, which depend primarily on political considerations, will actually materialize.

In recent years, tax depreciation has been used for numerous purposes which may be beneficial as such, but have nothing to do with the correct computation of the cost of facilities.

In this country, accelerated amortization was introduced originally as an incentive for private industry to construct facilities which the government considered important for defense production and related services. More recently, this provision has been used to promote the construction of facilities in remoter areas and to assist areas with a pool of long-term unemployed.

In countries of the British Commonwealth, changes in the so-called initial allowance have been used as a device for influencing business cycle fluctuation by increasing the allowances when there was a surplus of resources, and reducing it as a means to curtail investment in new facilities.

These measures may or may not accomplish the desired effects. But certainly, they have no relationship to proper methods of cost computations. In the circumstances, continuation of the widespread practice to consider tax depreciation automatically as the equivalent of a correct charge for the use of productive facilities will become less and less practical. Many business executives, unfortunately, sincerely feel that to deviate from this traditional practice would be wrong, or even illegal.[11] Everything possible should be done to clarify this situation, and to explain that there is no necessary correlation between those two methods of computing the cost of using productive facilities.

Reconciling Original Cost and Current Cost

Though the presentation of this paper's main argument has been completed, there remain a few further issues which merit a brief discussion; they are not immediately associated with the problem itself but may contribute in clearing up misunderstandings.

The first of them was already mentioned before. It refers to the accounting treatment of the difference which will occur in the computation of the charge for use of the productive facilities according to the traditional method, and the new one suggested here. This question may well be a matter of considerable concern to accounting executives, and

(11) The writer remembers one well-known and progressive financial executive exclaiming indignantly: "You won't expect me to keep two different sets of books," when he was asked about his company's method of computing depreciation. This shows the strength of feelings, even among forward-looking executives, regarding the need for using only one method for computing depreciation.

therefore will be taken up here to show that it does not present any significant obstacle to the adoption of the new method.

Financial accountants may continue to compute depreciation in accordance with their present method, say the straight-line method which is most widespread; while industrial accountants will charge out the current cost of facilities as recommended in this paper. Then there will be a difference between the two amounts which in most instances will be the result of an excess of the amount computed, according to the second method over that of the first.

This difference is of no concern to the industrial accountant who has determined his cost according to the best available method. But the financial accountant has to make a disposition of the amount in question. He has an alternative among a number of methods. The two most important will be outlined briefly:

1. The difference may be considered an additional allowance for depreciation against which future expenditures for replacement may be charged, particularly if they exceed the cost of the facility to be replaced.[12] As long as the present tax regulations are enforced, the amount in question will have to be added back to the taxable income.
2. The difference may be considered current revenue for purposes of income tax computation and shown as such on the income statement. This may be done in a number of ways. The amount may be deducted from the cost of production and thus increase inventory values and manufacturing income. Then inventories and manufacturing income will be shown on the basis of the correct cost of the productive facilities.

The procedure would have to be reversed if the cost accounting figure would be lower than the one computed by the financial accountants. This could happen if they used the declining balance method or when the cost of replacements falls considerably below that of older equipment.

Other methods of dealing with the difference may be applied as suitable by various companies. In no instance, however, can this be considered an issue of major significance.

Preference of Stockholders Over Other Creditors

Another objection frequently mentioned in connection with proposals to charge out facilities expenses on a replacement cost basis, asserts that such a procedure would give unjustified advantages to stockholders, as compared with bondholders and other creditors, whose claims would be subject to monetary fluctuations, while stockholders would get some sort of protection for their equity if the real value of facilities is maintained.

(12) Some leading companies use these allowance balances for writing off amounts resulting from excess obsolescence over the charges made in accordance with their depreciation schedules.

One may not agree with Mr. Peloubet that these bondholders and creditors took a chance on the maintenance of the purchasing power of money when they entered into contractual agreements with the debtor companies and, therefore, do not deserve special consideration.[13] But under present conditions, it is the stockholder who is discriminated against in the first place. He not only bears all the risks of carrying on the enterprise, too often overlooked or minimized by outside onlookers, but his share in the profit of the company is subject to double taxation and, in addition, managements have to retain the larger parts of corporate incomes in the enterprise to take care of their urgent requirement for funds which the market for equity investments cannot meet.

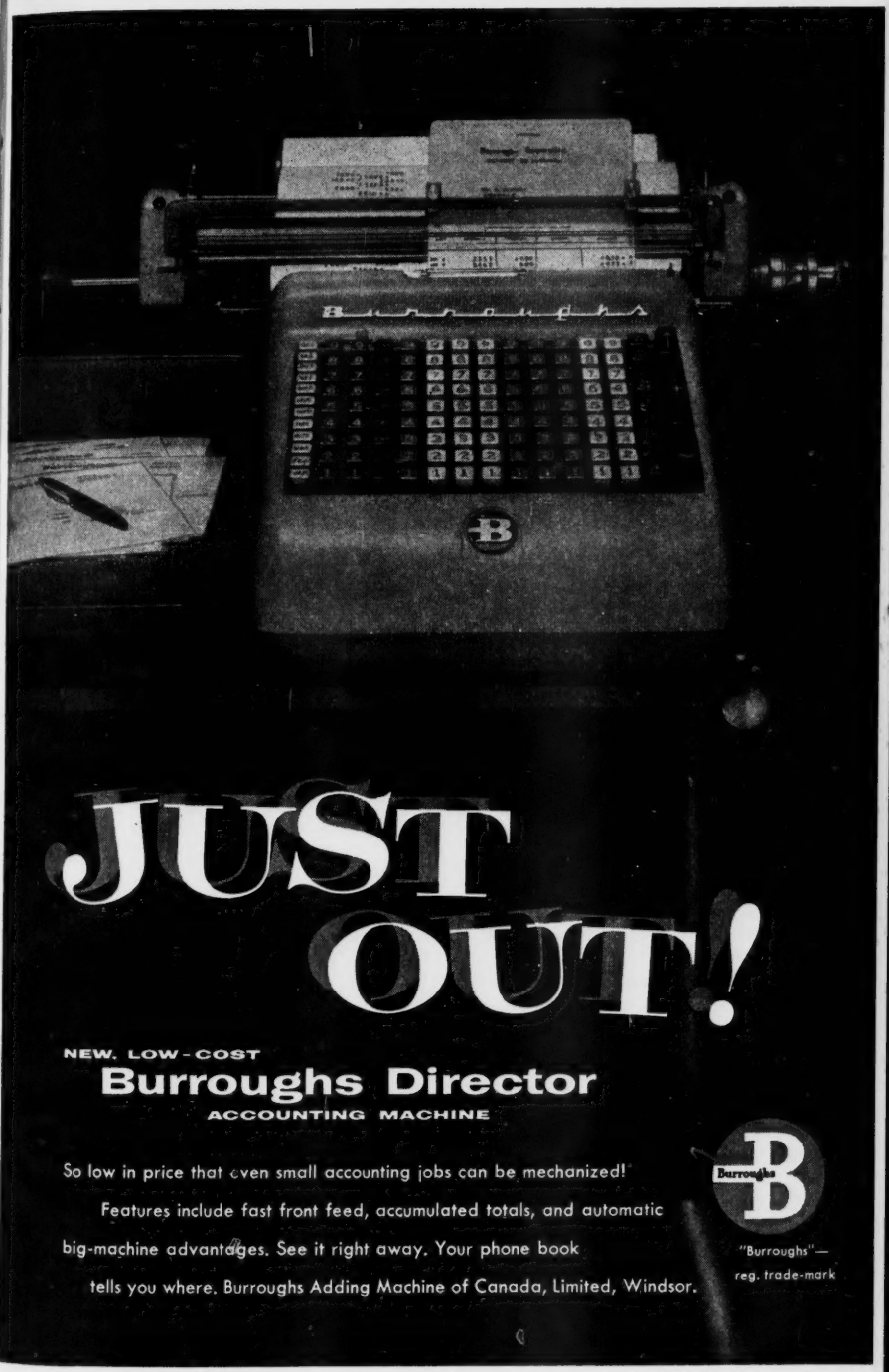
In addition, the public interest is siding with the stockholders in this instance. There is nothing more important to the common good than to maintain industrial equipment at the highest standard which technological progress makes possible. For only in this way can there be an increase in productivity and real incomes which everybody wants to achieve.

Therefore, it can be stated with confidence that the proposal advanced in this paper is in accordance with the best interests of the nation as a whole; objections on this score are not justified.

Conclusions

Our analysis has indicated that depreciation methods in current use are not adequate to reflect the true nature of the charge which represents the cost of using facilities and services in industrial production. No satisfactory methods of computing that charge are feasible under the present assumptions. They have to be modified to make way for a better method built on more realistic foundations. This new method will dispose of some long-standing problems which cannot be solved under the present set up. Substitution of the lease arrangement for ownership of facilities provides the key for working out a sounder method which should satisfy existing requirements. Further improvements may be made in the future once sufficient experience has been gained with the new method.

(13) See Reference (4).


JUST OUT!
NEW, LOW-COST
Burroughs Director
ACCOUNTING MACHINE
So low in price that even small accounting jobs can be mechanized!
Features include fast front feed, accumulated totals, and automatic big-machine advantages. See it right away. Your phone book tells you where. Burroughs Adding Machine of Canada, Limited, Windsor.
"Burroughs"—reg. trade-mark

"MY BOSS AGREES WITH ME!"

The IBM Electric made a big hit with me the first time I tried it. Just a *touch* produces beautiful, uniform typing—no more "pounding a typewriter" for *me!*

And is my boss happy, too! He says our new "IBM letters" are so distinctive they build up company prestige and even help to clinch some new business. I turn out my work in far less time, too, because it takes so much less effort. IBM "power typing" has given my job —and me— a real lift!

You can get more information and an IBM demonstration by calling your nearest IBM office or writing to International Business Machines Company Limited, Don Mills Road, Toronto 6, Ontario.

IBM ELECTRIC TYPEWRITERS ... OUTSELL ALL OTHER ELECTRICS COMBINED!

Cost Reduction in Action . . .

By WILLIAM L. SNYDER,
Manager, Cost Estimating Dept., York Corporation, Penna.

This paper puts forward some helpful pointers on the increasingly important subject of Cost Reduction.
Such a programme was developed through both product analysis and the use of cost reduction proposal forms submitted by the various departments of the company.

COST Control and Cost Reduction represent two entirely different fields, but each are of the utmost importance in any successful business organization.

Much emphasis has been placed on cost control, whereas, cost reduction has only been emphasized when an apparent need was felt for such an activity. Too frequently has cost reduction activity been of the "hit and miss" variety, and has failed to satisfy the need for it that exists in every company.

Cost Control requires proper organization, planning and procedures. Its purpose is to hold costs within predetermined standards and correct those conditions where the performances against these standards require change or modification.

Cost reduction also requires proper organization, planning and procedures. Its purpose is to effect the permanent lowering of all manufacturing, selling, engineering, administrative, and distribution costs.

Any effort toward reducing costs that places the company in a better position competitively, has a definite effect on all individuals working for that company.

An active cost reduction activity can be compared with the old time prospectors. Just as they worked hard to prospect for gold, there is plenty of gold to be found in an active and enthusiastic cost reduction programme.

Our company felt the need for a cost reduction programme as far back as 1940, when the first cost reduction committee was organized. This committee met at regular intervals and made comparative cost studies of individual products. These studies brought about changes in manufacturing methods and also engineering changes in design.

Due to the war, the committee meetings became farther apart and in late 1942, the activity was suspended entirely.

In the years following the war, the need for reorganization of the old Cost Reduction Committee became more apparent.

Planning for Cost Reduction

Early in 1950, representatives of the Manufacturing, Sales, Engineering and Controller's Divisions met with the Vice-President and Assistant to the President, to organize an effective cost reduction programme. As a result of this meeting the following points were decided:

1. A cost reduction committee would be organized to establish the programme and the procedures, as well as to review the cost reduction activity. This committee would meet every other week.
2. The cost reduction programme would embrace all activities of the corporation. This would include the home plant and offices and also all district offices.
3. A cost reduction team would be organized, whose responsibility it would be to spend full time on cost reduction investigations at the direction of the committee.

Organization for Cost Reduction

The Cost Reduction Committee organization includes the General Works Manager, Chief Industrial Engineer, Chief Engineer, Chief Draftsman, Assistant General Sales Manager and the Manager of the Cost Estimating Department. The Manager of the Cost Estimating Department, representing the Controller's Division, serves as chairman.

The Committee organized the Cost Reduction Team which includes two Industrial Engineers, a Buyer from the Purchasing Department, two Mechanical Engineers and a Cost Estimator. This six man team spends full time on Cost Reduction Investigations. They attend the committee meetings to report progress and receive new assignments.

It is the Cost Reduction Committee's responsibility to remove any road blocks that appear in the path of the Cost Reduction Team during a Cost Reduction Investigation.

Programme for Cost Reduction

The Cost Reduction Programme developed by the Committee was to approach the cost reduction effort in two ways. First, through product analysis, where each item of cost for a given product is carefully analyzed for cost reduction. Second, through the use of a cost reduction proposal form, through which cost reduction suggestions could be received from all departments of the various divisions, and also from the district offices.

Introducing the Programme

No programme of major importance can be successful unless it is properly introduced to the personnel upon which it is dependent.

In order to successfully launch the cost reduction programme, a meeting was held to explain the planning and also for discussion purposes.

Included in this meeting were supervisory employees of all divisions together with all Industrial Engineers, Buyers from Purchasing and Top Management.

At this meeting management stated that the Cost Reduction Committee was formed for the purpose of searching out and following through on all phases of cost reduction. That the purpose and desire

of the cost reduction activity, was to apply the corporations total "know-how" to the problem.

The proper introduction resulted in an over all enthusiasm for the programme, which could only result in its success.

Immediately after the meeting, copies of the cost reduction procedures were forwarded to those in attendance, by their respective division managers. Each division manager when distributing the procedures, attached a covering letter setting forth the reasons for the cost reduction programme, together with the results which were possible through the cooperation of everyone.

Product Analysis

The product to be analyzed is selected by the committee and assigned to the Cost Reduction Team. The product analysis usually begins with the product showing the largest sales volume and continues until all products have been completely investigated. This sequence can be changed if a low volume product requires immediate attention due to decreasing profit margins.

Sufficient copies of a completely costed bill of material, showing the cost analysis of material costs, labour costs, etc., are prepared for each group of the Cost Reduction Team.

The Cost Estimator prepares the bills of material and assists the other members of the team by furnishing cost information.

The Industrial Engineers investigate shop methods, operation times, tooling and equipment for possible cost reduction.

The Buyer investigates new sources, material prices and ordering quantities for possible cost reduction.

The Mechanical Engineers investigate the product design and recommend design changes for possible cost reduction.

After each group have completed their part of the investigation, the product is then reviewed by the team as a whole for further cost reduction.

When the investigation has been completed, a report of the Cost Reduction Team's recommendations is reviewed by the Cost Reduction Committee at their regular meeting.

Cost Reduction Proposals

The "Cost Reduction Proposal" (Exhibit 1) is made available to all personnel in each division and district. It is the responsibility of each division representative on the committee, to encourage the use of the proposal, and also to stress the importance of the cost reduction effort to all supervisors in his division.

The suggestor will fill out the "Cost Reduction Proposal" form as completely as possible. Any information that is available to the suggestor should be attached to the proposal. This would include drawings, sketches, layouts, etc.

Exhibit No. 1

COST REDUCTION PROPOSAL

No.: W-117
Date: Jan. 2, 1953

Part Name: Product B
Dwg. No.: 64-353, 64-354-SL Patt. No. B.M. No.:
Description of Change: To make pins longer in push rod, so they can be riveted instead of welded. By the rivet method, pins can be made red-hot with a torch, so it can be riveted easier. The present method as per drawing is to weld the end of the rivet in the rivet hole on the rod. Due to the present metals involved, and plus the small amount of welding surface on the end of the rivet—causes crystalization, thus causing the pin-rivets to be very easily sheared off. The proposed method will eliminate this.
Gains other than Cost:
Eliminate Welding
Eliminate Emery Cloth
Eliminate Filing
Eliminate Straightening
Remarks: Reference print will accompany this proposal, marked up, as per change.
Suggested by: C. Harbold, Weld Shop Superv's'n. Dept.: 531 Date: 2 Jan. '53
Approved for Processing by: Cost Reduction Committee Date: 1/7/53
(Not to be filled in by Suggestor)

Tool, Equipment and Pattern Cost				Cost Summary					
	Tools	Equip.	Patterns		Mat.	D.L.	Dir. O. Hd.	Ind. O. Hd.	Total
New				Present					
Changes				Pro'ed.					
Obsolete Value				Saving					
				Yearly Activity (Forecast)					
Total				Total Yearly Saving					

The form is forwarded by the suggestor to the Chairman of the Cost Reduction Committee, who immediately acknowledges receipt of the proposal to the suggestor. (Exhibit 2) A duplicate of this acknowledgement is forwarded to the suggestor's supervisor. The Chairman promptly reviews the proposal and after approval for investigation, forwards copies to the Cost Reduction Team for processing.

The Cost Reduction Team registers the proposal (Exhibit 3),

Exhibit No. 2

TO: Weld Shop January 27, 1953.
Atten.: Mr. C. Harbold
Subject: Cost Reduction Proposal
The Cost Reduction Proposal covering Push Rod Unloader for Compressors, which you submitted on January 6, 1953, has been approved for investigation.
Number W-117 has been assigned to this proposal, which should be referred to if you have any further comments.
After a complete investigation, you will be notified as to the final disposition of your proposal.
The Committee appreciates your cooperation toward the cost reduction effort and sincerely hopes to receive more suggestions from you in the future.
If, at any time, you desire to check the progress of your proposal, please contact the Chairman directly.

Cost Reduction Committee.

Forward to Chairman, Cost Reduction Committee.

Exhibit No. 3

COST REDUCTION PROPOSALS

No.	Dept.	Suggestor	Description	Date Received	Proposed Savings	Date Completed	Actual Savings	Date Effective
W-112	320	H. T. Martin	Flywheel	12/4/52	2578.80	6/15/53	2780.00	8/21/53
W-113	410	L. A. Fry	Cutters	12/19/52	12000.00	Cancelled	11/24/53	
W-114	408	J. H. Hoffman	Boss—Twin Bottom Solid	12/23/52	180.00	Cancelled	2/6/53	
W-115	531	Supervision Weld Shop	Gas Baffle	1/12/53	94.00	Cancelled	2/24/53	
W-116	412	H. Leeser	Base	1/5/53	130.47	1/15/53	137.92	1/26/53
W-117	531	Supervision Weld Shop	Push Rod Unloader for Compr.	1/6/53	2013.76	5/15/53	2115.62	8/14/53
W-118	464	H. W. Shindler E. Geesey	Misc. Valves and Fittings	1/28/53	95.00	3/26/53	335.57	4/22/53
W-119	531	Supv. Weld Shop C. A. Myers	Evaporator	1/30/53	1325.52	3/17/53	1483.18	6/16/53

roughly evaluates the savings and proceeds with their investigation. When the investigation has been completed, the proposal together with the results of the investigation is reviewed by the Cost Reduction Committee at their regular meeting.

Cost Reduction in Effect

The results of the cost reduction investigations are placed in effect as promptly as possible.

After approval by the committee, the Cost Reduction Team will forward copies of the product analysis or cost reduction proposals, together with all pertinent information to the proper department, which will proceed to put the proposal into effect through normal routines and procedures.

After the proposed changes have been put into effect, the department making the change will prepare a "Cost Reduction Accomplishment Report". (Exhibit 4) This report is forwarded to the Cost Reduction Team who will compare this report with the results of the original investigation to determine if the estimated savings are realized or better.

A copy of the Accomplishment Report is then forwarded to the Chairman of the Cost Reduction Committee who, if the cost reduction is the result of a proposal, immediately notifies the suggestor by letter (Exhibit 5) of the results of the proposal. A duplicate of this letter is forwarded to the suggestor's immediate supervisor.

If, after investigation the proposal is cancelled, the chairman notifies the suggestor by letter explaining in detail the reason for the cancellation.

Meetings

A successful activity depends upon the right kind of follow-up. The follow-up for our cost reduction activity is in the form of meetings held every other week. These meetings are attended by all members of the Cost Reduction Committee together with the Cost Reduction Team.

Attendance at any meeting is extremely important, and absenteeism at our meetings is rare. Members of the committee have expressed the opinion that the Cost Reduction Committeee meeting is one meeting they do not want to miss.

The meetings last approximately two hours and the agenda usually consists of the following:

1. A review for approval or cancellation of product analysis and cost reduction investigations completed by the Cost Reduction Team. This review has at times resulted in more cost reduction potential than the investigation reported.
2. A review of the progress of the Cost Reduction Team on uncompleted investigations. The purpose of this review is for the committee to assist in any way possible toward completing the investigation.

COST REDUCTION IN ACTION

Exhibit #4

COST REDUCTION

Proposal Work Sheet [ ] C.R.P. No. W-117

Accomplishment Report [x] Acc.R'p't. No. I-397

Date Aug. 14, 1953

Part Name Unloader Push Rod for Compressors

Dwg. No. 64-353-SL Patt. No. B. M. No.

Description of Change Change from Welding Pins to Rods to Riveting as per C.I.D. #2228.

Present Method				Proposed Method			
Operation	Sel. Min.	Dept	Sta. #	Operation	Sel. Min.	Dept.	Sta. #
Assem/Weld	3.7	531	A	Assem/Rivet 2 Pins	1.5	464	23
Grind Welds/Grind 30°				Grinding Elim.	---	---	
Angle	3.5	531	A				
Straighten	.63	531	B	Straighten (Elim)	---	---	
Total				Total			

Present Material		Proposed Material	
Description	Cost	Description	Cost
Total		Total	

Tools & Equipment Obsoleted		New Tools & Equipment	
Description	Value	Description	Value
		Riveting Fixt. & Punch	$140.00

Proposal Work Sheet		Cost Summary					
Developed by	Date		Mat.	D.L.	Dir. O.Hd	Ind. O.Hd	Total
		Present					$1.162
Accomplishment Report		Proposed					.133
Applied By	Date	Saving					$1.029
Approved By	Date	Yearly Activity (Forecast)					2056
Approved By	Date 8-14-53	Total Yearly Saving					$2.115.62

Exhibit No. 5

September 10, 1953.

TO: Weld Shop
Atten.: Mr. C. Harbold
Subject: Cost Reduction Proposal
W-117

The subject Cost Reduction Proposal, which you submitted on January 6, 1953, has been completely investigated and accepted by the Cost Reduction Committee, this proposal was put into effect and shows an estimated yearly savings of $2,115.62. The Committee appreciates your cooperation toward the cost reduction effort and sincerely hopes to receive more suggestions from you in the future.

Cost Reduction Committee.

3. A review of approved cost reduction investigations not yet placed in effect. The division representatives on the committee are asked to report on the reasons for the hold up and also to furnish dates when they will be effective.
4. A review of the overall cost reduction activity with regard to the number of proposals received, products to be investigated and dollars of cost reduction in effect.

Minutes of each meeting are forwarded to all in attendance at the meeting and also to management.

The committee will invite to their meetings, any individual who can render assistance on certain cost reduction investigations.

Reporting the Results

To be successful, a cost reduction activity must have an effective means of reporting the results of the investigation.

The Cost Reduction Team prepares monthly reports by products. (Exhibit 6) This report shows the proposed savings per piece, final savings per piece, and date the proposal is put into effect. Proposed savings are evaluated as soon as the proposal is received. When the investigation is completed, the amount in the proposed savings column is underlined, and the final results are shown in the final savings column. When the approved proposals are put into effect, the accomplishment report number and the effective date are inserted on the report which is continued for one fiscal year, and at the beginning of the new fiscal year, new reports are prepared and these remove all proposals that have been placed in effect during the previous year.

These reports are forwarded to the Chairman of the Cost Reduction Committee, who prepares a report for Management which shows the overall cost reduction dollars by production groups. (Exhibit 7) This report shows only the dollars in effect and compares the amounts, by years, from the beginning of the Cost Reduction Activity. A proposal which was effective in 1951 and still produces cost reduction dollars is not carried over from one fiscal year to the next. Each year shows only the dollars of cost reduction that were placed into effect that year.

Exhibit No. 6

Date: Sept. 30, 1953 — COST REDUCTION REPORT No. 27 — Sheet No. 1 of

Subject: Product B

Item No.	Description	Prop. No.	Proposed Saving	Cost Est. No.	Final Saving	Tool Cost	Approval	In Effect Acc. R#	In Effect Date
4	Crankshaft—Chg. method of drilling oil holes.	I163	3.689						
5	Shaft Seal Collar—Chg. Grinding and Lapping.	I175	1.807						
8	Unloader Push Rod Assembly—Riveting vs. Welding.	W117	2.030	CR-70	2.058 1.532	140.00	CID-2228	I-397	8-53
9	Misc. Parts—Multiple Drill Press vs. Radial Drilling	I145	7.166	CR-188	6.963	21,568.00	AFE-		
10	Crankshaft-Transfer Pinning Operation to New Wickes Lathe.	I197	4.022	CR-204	4-087	6,919.00	Project		

EXHIBIT No. 7

May 18, 1953

COST REDUCTION DOLLARS IN EFFECT

	Fiscal Year 1950-51	Fiscal Year 1951-52	Seven Months Ended April, 1953	Total
Product A	266,049.00	128,028.98	32,769.49	426,847.47
Product B	29,230.80	2,469.20	30,661.56	62,361.56
Product C	63,974.08	17,132.92	5,452.23	86,559.23
Product D	44,005.35	2,700.93	7,801.40	54,507.68
Product E	83,407.61	29,082.97	3,913.25	116,403.83
Product F	4,745.03	35,803.56	21,298.93	61,847.52
Product G	172,763.77	29,136.64	———	201,900.41
Product H	7,010.00	13,303.20	1,476.00	21,789.20
Product I	562,779.00	19,695.00	———	582,474.00
Product J	880.84	217.50	———	1,098.34
Product K	19,213.80	———	———	19,213.80
Product L	6,165.79	18,416.75	3,918.74	28,501.28
Product M	39,377.66	6,274.70	6,274.70	51,927.06
Product N	60,985.92	16,079.29	———	77,065.21
Product O	4,750.00	3,878.66	———	8,628.66
Product P	6,911.40	5,621.62	17,670.62	30,203.64
Product Q	———	13,282.95	———	13,282.95
Product R	———	3,694.29	———	3,694.29
Product S	———	11,428.35	3,632.60	15,060.95
Product T	———	6,182.00	———	6,182.00
Product U	———	5,650.00	———	5,650.00
Product V	———	———	6,518.35	6,518.35
Product W	———	———	5,618.50	5,618.50
Product X	———	———	6,264.00	6,264.00
Totals	1,372,250.05	368,079.51	153,270.37	1,893,599.93

A monthly report of cost reduction proposals (Exhibit 8) is also prepared, which is forwarded to Management, the Cost Reduction Committee, department and division managers.

This report has been very effective and has resulted in a competitive spirit among the various departments. It has retained the enthusiasm for the cost reduction activity that was present when the plan was introduced.

All reporting is based on the Sales Forecast for the fiscal year in which the savings are evaluated.

Cost Reduction in Action

The plan as outlined has given us action in cost reduction. The committee has gained the reputation for getting cost reduction accomplished quickly and effectively, and this has gained the confidence of the various departments and divisions with the result that proposals are received almost daily.

The proposals which have been received and put into effect cover expenditure of $50,000.00 for new equipment, to the proper colour to be used for Inter-Office Mailing Envelopes.

Exhibit No. 8

REPORT OF COST REDUCTION PROPOSALS

AS OF JULY 31, 1952—ALL DIVISIONS

	Received 10-1-50 to 9-30-51	Cancelled or In Effect 10-1-50 to 9-30-51	On Hand 9-30-51	Received 10-1-51 to 7-31-52	Cancelled or In Effect 10-1-51 to 7-31-52	On Hand 7-31-52	Dollars In Effect 10-1-50 to 9-30-51	Dollars In Effect 10-1-51 to 7-31-52
Foundry	70	12	58	8	35	31	———	13,094.59
Grantley Superintendent	25	16	9	33	20	22	7,676.81	15,345.91
Industrial Engineering	104	57	47	53	49	51	46,211.25	38,942.10
Maintenance	1	1	—	2	2	—	913.00	———
Procurement	52	26	26	31	35	22	220,674.54	41,323.77
Production Manager	4	2	2	26	9	19	2,398.00	2,505.00
Quality Control and Inspection	31	20	11	28	25	14	178.41	9,491.40
West York Superintendent	55	33	22	41	37	26	14,123.90	13,676.94
Total Manufacturing Division	342	167	175	222	212	185	292,175.91	134,379.71
Sales Division	52	—	52	3	54	1	———	59,716.07
Engineering Division	89	37	52	19	53	18	110,059.05	82,416.77
Administrative	3	—	3	1	1	3	———	625.30
Totals	486	204	282	245	320	207	402,234.96	277,137.85

Since the beginning of the programme, 1028 proposals have been received and processed. Some investigations require a shorter period of time, and others are dependent upon extensive tests.

As would be expected, the first year shows the greatest savings and has now reached a normal condition. The committee establishes a goal each year and then attempts to meet the goal.

All reports written by the committee stress the fact that the success of the programme depends entirely upon the cooperation of the entire corporation personnel.

The expense of operating the programme has been returned ten fold by the cost reduction savings. The Cost Reduction Team was established because the committee believed that to fully realize the cost reduction potential, the project would require full time investigations.

I am sure that all of us have had brought to our attention the importance of a cost reduction activity. Since 1946 more papers have been written on this subject than occurred during the prior twenty years.

Cost reduction is one field the industrial accountant should really cultivate. The subject is challenging and the results are satisfying.

Any cost reduction activity can be successful provided action is put into its planning, organization and procedures.

Student Section . . .

YOUR THESIS

By J. Forbes Abercrombie, R.I.A.

This is the last of four papers presented by students at the January meeting of the Calgary Chapter, and deals with the preparation of the thesis.
Student comment on all, or any of these papers is invited by the Editor.

I have been asked to talk to you on a subject which is, or will be, dear to your hearts, namely, the preparation of the thesis.

I should say right here that any views I express are my own and not necessarily those of the management!

I don't think it is necessary for me to go into details as to the exact requirements of the Society. Those of you who are at, or approaching, the thesis stage have the requirements engraved on your memory, and those who have still to complete the course, if you do not already know them, will learn them in due course.

However, finding out what is required in the thesis is not the problem to be faced. The problem is to fulfil the requirements satisfactorily.

I sometimes wonder how many of us really use our Cost and Management magazines. Apart from working out some of the problems given at the back of the magazine, I'm afraid I have given it only casual attention. I know now that most of the articles are well worth the time it takes to read them and I have since tried to mend my ways, for the magazine contains some very interesting and very informative articles.

In the June 1951 issue, for instance, there is an excellent article called "Why and How to Write Your Thesis".

The article has since been prepared in pamphlet form and is available to all final year students. I would suggest that *every* student obtain a copy of the article and read it occasionally until the information it contains is as familiar as the details of a plan or blueprint.

For that is what it is—the blueprint for a thesis.

The results of our research into the subject we choose is the material for our thesis. If we really know the plan of the thesis by heart, we have a much better idea of the material we need to complete it and the construction job can be done more easily and more efficiently.

I said that *every* student should get a copy of the article. It is never too early to start thinking about our thesis. I wish I had started to think of mine sooner than I did. I certainly intended to—but you know how things go.

In the first year of the course when everyone is gay and carefree—or is my memory failing—the thesis is a small bump on the horizon—that is if it's visible at all. Towards the end of the course, you can hear a different topic of conversation in the corridors at Mount Royal . . . "Thought about your thesis yet?" . . . Many of you will know what I mean. Then you find out just how big a job it really is but, that with some effort, it *can* be overcome.

It is not a simple exercise. It isn't meant to be and would have little value if it was. On the other hand, it is not an impossible assignment.

Those of us who attempt the thesis have already spent some considerable time training and qualifying ourselves to undertake this final proposition.

Up to that time, the instructor has been with us at the joystick—I use the word "joy" loosely—and by examination we have proved that we at least know how to handle the controls. From now on we should be able to fly alone, and the thesis is our first solo, so to speak.

The first step is, of course, to choose a suitable subject.

Alberta is not, as yet, an industrial province and many of us do have a problem in choosing our subject. However there *are* many suitable subjects to be found right here in the city and it seems new possibilities are always added. If your own line of business is absolutely "out" as your subject, then I suggest you approach the management of some business which you feel might lend itself to your purpose and seek their co-operation. I know of at least one thesis which was prepared in this manner. This approach requires more effort than the study of a familiar subject but it has bonus dividends in broadened experience and a greater appreciation of the adaptability of accounting fundamentals to meet specific and perhaps unusual requirements.

The second step is to gain a sound overall working knowledge of the entire operation. Find out how the product is made, the problems of making it, why it is made here, the market area it serves and the competition it meets. Find out if there are seasonal peaks, and if so, why, what is done to even out production and maintain sals.

Talk to the president—if you can, and with the man who produces the goods, discuss the problems of the office boy. You might even take the stenographer out to lunch—it's worth a try anyway.

Then read some trade magazines, business reviews, statistical reports to place the industry in its proper perspective in the national and international picture.

Once you feel you've been in the business all your life you are ready to undertake the more serious and specialized study which will eventually become your thesis. And more important, you have conditioned yourself to your problem and minimized the possibility of expressing opinions incongruous to it. In fact you have done just about everything possible to warrant an interesting and ecceptable thesis with the least possible drudgery.

However, there still comes the time when you find yourself sitting at a table with a blank pad of paper in front of you and an even blanker expression on your face.

You have, of course, already persuaded yourself that you *could* miss the radio programme—which incidentally you never listen to at other times. You've probably also checked the newspaper for any shows worth seeing and as a last desperate measure, even offered to wax the floor for your wife!

Of course, if some of you have not taken heed of the advice given at the beginning of this talk, read "Why and How to Write Your Thesis"—and read it again. It is meant to help and it does.

However, at long last there is something written on the pad, apart from the doodles. It may not be Shakespeare but at least it is your own. Usually the first word is the hardest to find and the first sentence the hardest to write. I am not saying the ideas flow freely after that but at least there's a leak in the dam.

So don't worry unduly about the grammar of your first draft. Unles you are one of the fortunate few, your thesis will undergo one and possibly more revisions before those two neatly typed copies in all their sparkling originality arrive at the examiner's table.

If you can understand your first draft, that is all that is required of it. It may be that even paragraph headings will be sufficient . . . with the flesh added later to the bones. The plan of attack will depend on the approach most suited to the individual.

The main thing is to get your ideas on paper and relate them to each other. Sometimes, apparently sound ideas considered independently, fairly clash with each other when viewed in a common light. The whole thesis has to be a well reasoned and well balanced professional dissertation. There is no restriction on the introduction of GREAT NEW THOUGHTS, but they are not really expected and could well be dispensed with until their worth has been proved—by, say ten or twenty years of practical use—or the student has his thesis safely and successfully behind him.

What *is* expected is written proof that you have absorbed the theory of cost accounting and are able to apply it practically and logically, and present your findings clearly.

Simple, isn't it?

The proof, of course, lies in the finished product and the finished product is the result of much polishing and refinement. It is not a speedy job rewriting a thesis and perhaps doing whole sections all over again—but it *is* worthwhile although it may be hard to appreciate that point of view at the time. You are not the first person who has had to do it, nor will you be the last.

At times you will feel the warm glow of the genius who has discovered himself. At other times you will almost certainly hold your manuscript at arm's length, between finger and thumb and look for some place to quietly dispose of it.

Despite our individual differences we are all pretty much of the same mould. I doubt if anyone ever found preparing his thesis to be no trouble at all. The hardest part of the whole business is starting it—and I mean really opening up on the target with the heavy artillery. Most of us here are in various stages of training for that final assault—the greatest difference between us is that some of us, right here in this room new, will make the final effort and some of us will never quite get around to it—for a variety of reasons, all perfectly sound and legitimate—to us.

The Society prescribes the satisfactory submission of a thesis as the final requirement in its course of studies. If you cannot, or are unwilling to meet this final requirement you lack a vital qualification to become a registered member of the Society; you have sat in judgment upon yourself and justice has been served.

I say, tackle the job, and tackle it now. It is a big job, I am not belitting it—it is a worthwhile job—it is valuable training—and best of all it's a job you *can* do.